DETAILED ACTION

1. Claims 22-32 are pending.

2. This final rejection supersedes the previous office action, because Examiner inadvertently left out the new added claims 31 and 32.

3. The abstract of the disclosure is objected to because the title should be deleted on top of the abstract. Correction is required. See MPEP § 608.01(b).

The rejection to c Claims 22-30 under 35 U.S.C. 103(a) as being unpatentable over **Wharton** (U.S. Pat. No. **6,595,052)** in view of **Murray et al.** (U.S. Pat. No. **6,067,662)** is maintained.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 22-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Wharton** (U.S. Pat. No. **6,595,052)** in view of **Murray et al.** (U.S. Pat. No. **6,067,662)**.

As per claims 22 and 29, **Wharton** teaches a system and an associated method for receiving parts and feeding a manufacturing plant with a workpiece from a readied stack of workpieces (see col. 15, lines 48-51), the gripping device comprising a gripper head supporting gripping means (see col. 14, lines 37-38, particularly "a work piece holding device for gripping"), and a detection system for detecting a workpiece received by the gripping means (see col. 15, lines 37-47, wherein the computer being considered as detection device), and at least one vibration sensor for sensing the vibrations of the workpiece (see col. 11, line 57 -- to -- col. line -12, particularly the "vibration sensors"), and a memory and/or analytical module structured and arranged to conduct a vibration analysis on a vibration signal from said vibration sensor (see col. 11, line 57 -- to -- col. line -12, particularly the memory), wherein the detection system and the memory and/or analytical module jointly form a component part detachably arranged on the gripper head and in communication with a controller of the manufacturing (see col. 11, line 37 -- to -- col. line -12 as noted above) plant via a bus system comprising an (ASi bus)[1] being taken as a cable; wherein the vibration sensor is applied to a surface of the workpiece by a contact pressure-exerting device (being taken as Piezoelectric sensor, wherein according to Globalspec "Piezoelectric sensors measure the electrical potential caused by applying mechanical force to a piezoelectric material. Piezoelectric sensors are used in a variety of pressure-sensing

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[1] **ASI-bus cables** – All bus cables provide signal transmission for wider control purposes beyond simple servo-motor functions. ASI-bus (co-developed with Siemens) is a flat 2-core, 1.5 mm2 cable which fits into a special module with pins, making it fast and easy to connect within high security systems.

For its mailing/sorting systems, instead of multicore cables, Siemens preferred an easy-to-install cable which could send several control functions to various "addresses" via a simple two-core cable.

AS-I cables are used in network systems for the lowest field level of automation and communication technology. This flat cable consists of two cores which transmit both data and power. The contact is made by special technology by piercing through the outer jacket and core insulation with AS-I modules. A specially designed grooved jacket ensures installations and connection errors are minimized. The jacket provides resistance to oils, grease and refrigeration lubricants. AS-I versions in TPE and PUR are suitable for wet surroundings in machinery, plant construction, machine tools and automotive industry.

applications. Alumina ceramics, single crystals, and ultrasonic transducers are few examples of piezoelectric materials. A piezoelectric sensor works on the principle of conversion of energy in mechanical and electrical energy forms. When a polarized crystal is put under pressure, some mechanical deformation takes place in the polarized crystal, which leads in the generation of the electric charge. The generated electric charge or the mechanical deformation can then be measured using a (piezo sensor)[2]. There are many types of piezoelectric sensors. Examples include a piezoelectric accelerometer, piezoelectric force sensors, and piezoelectric pressure sensors. A piezoelectric accelerometer is widely used for OEM applications and is suitable for working at a lower power consumption and wider frequency range. Piezoelectric force sensors are low impedance voltage force sensors designed for generating analog voltage signals when a force is applied on the piezoelectric crystal and are widely used in machines for measuring force. A piezoelectric pressure sensor is also known as piezoelectric sensor pressure. Piezoelectric pressure sensors are used for measuring change in liquid and gases pressure. Other piezoelectric sensors are commonly available."), whereupon a pulse is applied to the workpiece by the pulse emitter with a contact time of about 200 ms for exciting vibrations (using a contact time of about

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[2] **Piezo sensors** - generate electricity in response to applied stress. When the piezo film is bent from the mechanical neutral axis, a very high strain within the piezopolymer is created and generates a high voltage. Comes wire assembled, ready for immediate connection to the Make Controller.

The sensor has two wires - it doesn't matter which side gets connected to which, but they should be connected to:

- One side to a **VIn** set to **3.3V**.
- The other side to an **Analog In**, 0-7.

Piezoelectric sensors measure the electrical potential caused by applying mechanical force to a piezoelectric material. They are used in a variety of pressure-sensing applications

200 ms, falls under design choice). Wharton does not specifically teach a robot type that contains gripping device for a manipulation system; and comprising at least one pulse emitter acting upon the workpiece to excite vibrations in the workpiece.

Murray et al., teaches a robot type that contains gripping device for a manipulation system (see abs and fig. 1, elements 100 and 102); and comprising at least one pulse emitter acting upon the workpiece to excite vibrations in the workpiece (see fig. 15 and col. 1, lines 19-35).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the gripping/holding type of Wharton, with the gripping type of Murray, because this modification would have introduced robot and a gripping/holding system into Wharton's system, thereby improving the efficiency and the reliability of the gripping device.

As per claim 24, **Wharton** teaches a system wherein data are wirelessly transmitted between the vibration sensor and/or the memory and/or analytical module and/or the controller (see fig. 8, element 352, and col. 11, lines 37-56, wherein transmitting data wirelessly falls under design choice).

As per claim 25, **Murray et al.** teaches in view of **Wharton** teaches a system wherein the pulse emitter is formed by a striking tappet acted upon by kinetic energy (see figs. 1 and 10, wherein the bending machine has been considered as striking tappet).

As per claim 26, **Wharton** teaches a system wherein the vibration sensor is formed by an (acceleration sensor)[3] arranged to be placed onto a surface of the workpiece (see col. 16, lines 10-44).

As per claim 27, **Wharton** teaches a system wherein the acceleration sensor is supported on the gripper head via a contact-pressure-exerting device (see col. 14, lines 37-38, particularly "a work piece holding device for gripping" as noted above).

As per claim 28, **Wharton** teaches a system wherein the pulse emitter is provided with the vibration sensor (see col. 16, lines 10-29).

As per claim 30, **Wharton** teaches a system wherein the comparing step comprises comparing the vibration spectrum with reference data so as to determine whether one or more additional workpieces is/are stuck to the workpiece gripped by the gripping device (see col. 15, line 37 –- to -- col. 16, line -44).

As per claim 31, **Wharton** teaches a system wherein the memory and/or analytical module is structured and arranged to record signals from the vibration sensor (see fig. 8, element

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[3] Vibration sensors are sensors for measuring, displaying and analyzing linear velocity, displacement and proximity, or ***else acceleration***. They can be used on a stand-alone basis, or in conjunction with a data acquisition system. Vibration sensors are available in many forms. They can be raw sensing elements, packaged transducers, or as a sensor system or instrument, incorporating features such as totalizing, local or remote display and data recording.

Vibration sensors can have from one axis to three axes of measurement, the multiple axes typically being orthogonal to each other. These devices work on many operating principles. The most common types of vibration sensors are piezoelectric, capacitance, null-balance, strain gage, resonance beam, piezoresistive and magnetic induction. An alternative to traditional vibration sensors is one manufactured using MEMS technology, a micro-machining technology that allows for a much smaller device and thus package design.

352, and col. 11, lines 37-56, wherein transmitting data wirelessly falls under design choice), and to compare a vibration spectrum of the workpiece with reference vibration data so as to determine whether one or more additional workpieces is/are stuck to the workpiece gripped by the gripping device (see col. 15, line 37 -- to -- col. 16, line -44).

As per claim 32, **Wharton** teaches a system wherein the memory and/or analytical module is structured and arranged to record signals from the vibration sensor (see fig. 8, element 352, and col. 11, lines 37-56, wherein transmitting data wirelessly falls under design choice), and to compare a vibration spectrum of the workpiece with reference vibration data so as to determine via the vibration spectrum (see col. 15, line 37 -- to -- col. 16, line -44) whether the seized workpiece is the correct part (see col. 8, lines 8-19, wherein correct part has been determined by balance/unbalance and if unbalance, correction will be made).

Allowable Subject Matter

6. Claim 23 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record fail to teach or fairly suggest a gripping device for a manipulation system wherein a pulse emitter has an impact tappet that strikes the workpiece seized by the

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gripping device with a preset striking pulse with a preset energy and the pulse emitter is provided with a piezo sensor for determining the acceleration of the impact tappet impacting the workpiece and for determining the delay after the pulse has been applied.

Response to Arguments

8. As to the reference not teaching a gripping device for manipulating a robot/machine (see Murray's et al. abs and fig. 1, elements 100 and 102);

As to the reference not teaching pulse emitter acting upon the workpiece to excite vibrations in the workpiece (see fig. 15 and col. 1, lines 19-35);

As to the reference not teaching (detection system and memory/analytical module) being detachably arranged on the gripper head in communication with the controller of the manufacturing plant via a bus system comprising an ASi bus (any line/cable that connects one electromechanical component to the next is a bus).

As to the reference not teaching any robot (see Murray's et al. fig. 1);

As to the reference not teaching a striking tappet (see Murray's et al. figs. 1 and 10, wherein the bending machine has been considered as striking tappet).

As to the reference not teaching an acceleration sensor arranged to be placed onto a surface of the workpiece (see footnote for acceleration sensor);

As to the reference not teaching lifting a gripped workpiece up from a stack with the gripping device (see fig. 1, elements 100 and 102);

As to the reference not teaching exciting vibrations in a workpiece after the work piece has been lifted from a stack of workpieces (see fig. 1, elements 100 and 102);

As to the reference not teaching a pulse is applied to the workpiece by the pulse emitter with a contact time of about 200 ms for exciting vibrations has not been claimed.

As to the reference not teaching determine whether one or more additional workpieces is/are stuck to the workpiece gripped by the gripping device (see Murray's et al. fig. 1).

9. Applicant's arguments filed 10/19/2009 have been fully considered but they are not persuasive.

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MCDIEUNEL MARC whose telephone number is (571)272-6964. The examiner can normally be reached on 6:30-5:00 Mon-Thu.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Khoi Tran can be reached on (571) 272-6919. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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